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December 2, 1998

Ms. Bonnie Lavelle
U.S. Environmental Protection Agency
Region VIII
999 18th Street, Suite 500
Denver, CO 80202-2466

RE: Vasquez Boulevard/I-70 Residential Soils Supplemental Investigation
Physico-Chemical Characterization of Soils

Dear Ms. Lavelle:

Thank you for the opportunity to review the draft report titled Vasquez Boulevard/I-70 Residential Soils Supplemental Investigation: Physico-Chemical Characterization of Soils, prepared by ISSI consulting Group, Inc. We also received supporting tables for review on November 13, 1998. We have the following comments:

1. Section 2.2. Were the samples analyzed for chemical speciation from the bulk or fine subset? A brief summary of sample preparation would be helpful. It also would be helpful to have a qualitative discussion of the results of speciation. Factors that could be discussed include particle shape (rounded blebs versus blocky particles), whether different phases of metals appear to be co-located, and whether other trace metals were seen in numbers too small to be quantified as ppm.
2. Section 2.3. The text would be improved by a discussion of methodologies used that addresses the questions raised in item 3 below. While the earlier narrative concludes that there is little difference between bulk and fine arsenic concentrations, this section concludes that the arsenic-bearing particles are predominately found in particles between <5 to 49 um in size. An explanation or discussion regarding this seemingly contradictory situation would be helpful.
3. Figures 1A through 1D. These figures graphically represent the comparison of metals concentrations in bulk versus fine samples. The text states that these figures show little difference in concentrations in any of the four chemicals for bulk versus fines. The text also states that the respective 90% confidence intervals are shown. The tables show dotted lines relatively close to the line representing bulk versus fine, which we initially assumed represented the 90% confidence interval. However, a count of the points located outside of the dotted lines reveals that greater than 50% of the points are located outside of the dotted lines. By definition, approximately 90% of the points should be located within the 90% confidence interval. What is the significance of the dotted lines? Our assumption is that the 90% confidence interval is intended to represent 5% chance of error above the line and 5% below. Is this correct? How was the 90% confidence interval calculated? Were a large number of points eliminated as outliers? What is the standard deviation of the data? It appears that a more broadly defined 90% confidence interval could result in estimations of significant variation between fine and bulk.
4. Figures 1A through 1D. It would be helpful to provide tables that show the supporting data by bulk and fine concentrations.
5. Table _-_. Is this table representing bulk or fine concentrations?
6. Table - Supporting Calculations for Relative Arsenic Mass by Phase. The table includes a heading that appears to state that the units are total particle counts. If so, shouldn't the values be whole numbers of particles counted? What are the

units in this table and how are these values used? The values are the same as those shown in the next table labeled Number of Particles in Each Phase, which are presented as round numbers. How do these tables differ in information presented?

7. Table - Supporting Calculations for Relative Arsenic Mass by Phase, Number of Particles in Each Phase. Were other trace particles such as indium, selenium, thallium, or mercury counted? Were particles in small quantities (less than 50 particles) counted? At the Globe site, samples contained small numbers of trace metals that may be indicative of the contaminant source. The presence or absence of trace metals in very small quantities is important information that may be telling in determining contaminant source.

Thank you for the opportunity to comment on this document. I apologize for the delay in providing these comments. If you have any questions regarding these comments, please contact me at 303-285-4065.

Sincerely,



Celia VanDerLoop
Denver Department of Environmental Health

Cc: Steve Foute – EPD
John Student – EPD
Barbara O’Grady – CDPHE
Frances Hartogh - AGO